

19 JUL 2004

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
31 July 2003 (31.07.2003)

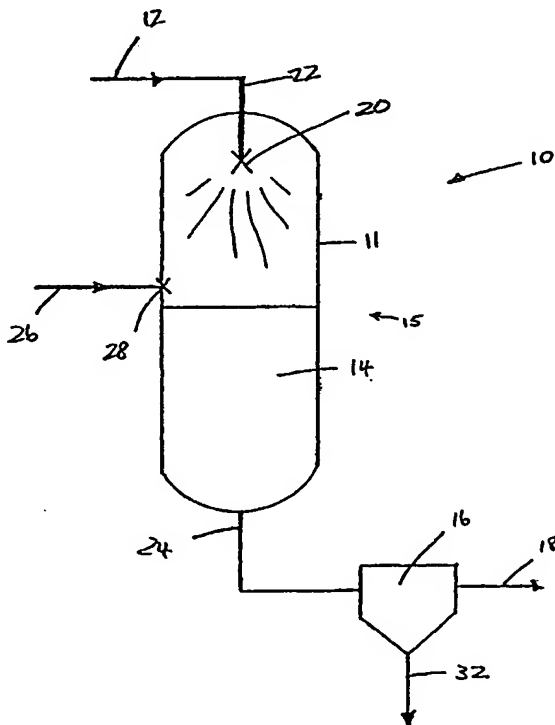
PCT

(10) International Publication Number  
WO 03/062725 A1

- (51) International Patent Classification<sup>7</sup>: F25J 3/08, 3/00, 1/00, 1/02, C10L 3/10, 3/00, C10G 5/06
- (21) International Application Number: PCT/AU03/00050
- (22) International Filing Date: 17 January 2003 (17.01.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
PS 0021 18 January 2002 (18.01.2002) AU  
2002950681 12 August 2002 (12.08.2002) AU
- (71) Applicants (*for all designated States except US*): CURTIN UNIVERSITY OF TECHNOLOGY [AU/AU]; Kent Street, Bentley, Western Australia 6102 (AU). CORE LABORATORIES AUSTRALIA PTY LTD [AU/AU]; 447-449 Belmont Avenue, Kewdale, Western Australia 6105 (AU).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): AMIN, Robert [DK/AU]; 10 Howard Parade, Salter Point, Western Australia 6152 (AU). KENNAIRD, Anthony, Frederick [AU/AU]; 39 Merrifield Circle, Leeming, Western Australia 6149 (AU).
- (74) Agent: MIZZLI, Anthony, Paul; Griffith Hack, Level 6, 256 Adelaide Terrace, Perth, Western Australia 6000 (AU).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: PROCESS AND DEVICE FOR PRODUCTION OF LNG BY REMOVAL OF FREEZABLE SOLIDS



(57) Abstract: Novel processes and devices for the removal of freezable species such as carbon dioxide, water and heavy hydrocarbons from a natural gas feed stream during liquefaction to produce LNG are disclosed. The freezable species are able to be removed as a solid, avoiding the costly step of pre-treatment to remove the freezable species from the natural gas feed stream prior to the liquefaction stage. The freezable species may be removed on a continuous basis being separated as solids following liquefaction of the natural gas feed stream with subsequent separation of the solids. The solid freezable species may then be liquefied on a continuous basis if required with natural gas recycled to the process. Continuous removal of the freezable species from the natural gas feed stream is achievable by maintaining cooling and separation apparatus at the same working pressure. Advantageously, at least part of the cooling vessel is constructed from a material having a low thermal conductivity which discourages formation of the solids of the freezable species on the walls of the cooling vessel.

WO 03/062725 A1